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DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

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November 3, 1988

Ken A. Kluksdahl
Tenneco Minerals
P.O. Box 2650
955 North 1300 West #4
St. George, Utah 84770

Re: Gold Strike Mine, Phase I
Construction Permit

Dear Mr. Kluksdahl:

We have reviewed the plans and specifications for the first phase of the Gold Strike Heap Leach facility, prepared by your consultants, JBR Consultants, Inc, submitted to us on September 27, 1988.

The project basically appears to comply with current design requirements and practices for heap leach facilities. A **construction permit, *as* constituted by this letter is hereby issued** subject to the following conditions:

a. Sulfide bearing ore or waste rock will not be removed or uncovered as a result of any of the construction on this project covered by this permit.

b. An operation and maintenance manual for the permitted heap leach facilities, shall be submitted for review and approval before operation can be authorized.

c. A closure plan for the permitted heap leach facilities shall be submitted for review and approval before operation can be authorized.

d. A contingency plan for the worst spill scenarios for this project and appropriate response actions for containment, minimizing the damage and possible remedies, shall be submitted for review and approval before operation can be authorized.

e. The Bureau of Water Pollution Control (the Bureau) shall be notified at least two (2) days after completion of each component listed below and before construction of the next sequenced component, so proper inspection can be arranged:

1. Construction of leak detection system base.
2. Construction of each lift of the secondary clay liner.
3. Field seaming of the flexible membrane liner.

f. The Bureau shall be notified in a timely manner to schedule an inspection of the primary liner surface, and defects corrected prior to loading the primary liner surface with ore.

g. The Bureau shall be notified in writing within ten (10) days of completion of leaching operations and prior to commencing closure procedures.

h. The Bureau shall be notified in writing of the completion of construction of these facilities so a final inspection can be arranged before commencement of leaching operations will be authorized.

i. The construction permit allows the use of the Heap leach pad until January 1, 1994. Neutralization procedures shall commence on or before that date. The remainder of these facilities shall be usable until January 1, 2000 at which time closure of all project facilities shall commence.

j. The construction of the facilities described in this construction permit shall be under substantial and continuous construction except when construction and/or mining is discontinued due to weather. This is allowed as a result of site constraints which require cycles of mining and construction activity.

k. Domestic wastewater facilities during construction activities shall be approved by the Southwest District Health Department.

l. Any liquids detected in any leak detection sump shall be reported to the Bureau by phone within 24 hours and in writing within 5 days.

m. The neutralization criteria shall be as adopted by the Utah Water Pollution Control Committee at the time of decommissioning, or as approved in writing by the Bureau at the time of decommissioning, ***but in no case shall the neutralization criteria for this heap leach project result in degradation of the surface or groundwater quality including beneficial uses thereof in the vicinity.***

The attainment of agreed upon neutralization criteria must be verified in three (3) tests reasonably spaced during a twenty four (24) hour period.

The requirements for neutralization verification by analysis of the spent ore will not be required on the condition that the spent ore piles will be left undisturbed and fenced for at least six (6) years once neutralized.

n. All changes to these approved plans and specifications must be reviewed and approved by the Bureau.

o. Constructibility of additional pads with respect to the first phase pad will have to be reviewed separately.

p. The project shall be inspected continuously while under construction by a qualified and independent construction inspector.

q. Plans for the emergency overflow structure of the process water pond shall be submitted for review and approval prior to initiating construction of the same.

r. The detailed requirements for sealing around leak detection piping or any other penetrations of the flexible membrane liner shall be provided for review and approval prior to construction of the flexible membrane liner.

s. The process piping shall meet the following additional requirements:

1. All process piping for this project shall be contained within a larger pipe. Any spillage or leakage from such carrier pipes shall be conveyed to an acceptable containment.

2. The outer pipe for process piping containment shall be SDR 32.5 minimum and shall be supported throughout its entire length and be back filled to the top of the pipe with a suitable back fill material at all road crossings.

t. Up to 40% of the clay liner material may be gravel and shall meet the following:

1. Twenty (20) percent less than 1 inch size.

2. Fourty (40) percent less than 3 inch size and in no case shall the 3 inch material exceed a maximum of five (5) percent.

u. 1. The test fill secondary clay liner which shall be the liner for the first solution pond shall have in addition to the tests specified ten (10) tube samples taken to evaluate the acceptability of the clay remolding as a result of compaction. The tube samples shall be evaluated by the qualified independant construction inspector to determine if the design goal of remolding the clay particles and elimination of interclod spaces has been in his judgement acceptably achieved.

The owner understands and agrees that the test section shall meet liner specifications when completed or shall be reworked or removed and replaced.

2. The compaction of clay liner material shall be conducted at or above optimum moisture content as established by laboratory testing for the clay material. The compaction equipment used shall not blend the underlying leak detection material with the clay and shall compact in the non vibratory mode.

v. The quality assurance testing for clay material in the earthwork specifications shall be modified so gradation tests shall be conducted every 400 cubic yards.

The depth of the leak detection media shall be verified on a 50 foot grid spacing and shall be certified in writing by the inspector to meet the design requirements.

w. Details for structural continuity of the diatomaceous earth pond and ramp floor slabs with wall footings in addition to an acceptable ribbed water-stop detail shall be submitted for review and approval prior to constructing the D.E. pond and ramp.

Issues of process piping, testing of clay liner and gravel fraction were discussed with and agreed to by Mr. Brian Buck and yourself in October 21 and November 2, 1988 telephone conversations respectively.

The project construction authorized by this permit is as follows:

Process Plant

The process plant and chemical storage area shall be underlain by eight (8) inches of concrete which will direct any leakage or spills to the Barren ponds.

The diatomaceous earth pond shall consist of a 40 foot by 20 foot by 5 foot deep reinforced concrete tank type structure. One side of the structure shall consist of a reinforced concrete ramp to allow vehicles access to the floor of the structure. The entire structure shall have its waterproof integrity verified by a ten (10) day static water test which shall be satisfactorily completed and certified in writing prior to initiating operations.

Process Ponds

Process ponds shall consist of three (3) ponds each having 1,000,000 gallons of volumetric capacity.

The total process pond capacity of 3,000,000 gallons is justified based on the following:

Normal process fluid inventory	900,000 gallons
2-foot freeboard	1,000,000 gallons
Storm water yield*	531,000 gallons
Runoff from the pad margin	241,000 gallons
precipitation falling into ponds	143,000 gallons
Total	2,815,000 gallons

* Based upon the presentation by JBR consultants, 100 year 24 hour storm event precipitation falling directly on only the active heap leach ore pile will be figured into this calculation.

The pond liner system shall consist of:

60 mil HDPE primary liner
1 x 10^{-2} $(meter)^2$ per second geogrid
12.0 ounce per sq yard geotextile
18 inches minimum of 1.0 x 10^{-7} centimeters per second secondary clay liner.

Adequate diversion improvements shall divert surface water run off around the process ponds.

Process Piping

All process piping or transfer piping shall be contained in a double liner pipe so any spillage or leakage will flow to an acceptably lined and adequately sized containment facility.

Heap Leach Pads

The heap leach pad covered by this construction permit shall be approximately a five sided figure consisting of sides with lengths 600 feet, 550 feet, 350 feet, 400 feet and 400 feet. The total area of the pad will be approximately 7.0 acres, and ore will be stacked upon this pad to a maximum height of 100 feet.

The heap leach pad liner system shall be capable of retaining its integrity under the ore loads imposed and shall consist of:

process solution collection system with head limited to 12 inches
60 mil HDPE primary liner
12 inch minimum of 1.0 x 10^{-7} centimeters per second secondary clay liner
6 inch minimum of 1.0 x 10^{-1} centimeter per second leak detection media
6 inch minimum of 1.0 x 10^{-6} centimeter per second base.

The leak detection system will be divided by clay barriers and each section shall have individual leak detection pipes to better identify any leaks. The heap leach pad shall be surrounded by barrier mounds and drainage ditches to prevent surface runoff from entering.

Surface Runoff

Diversion ditches shall intercept and direct surface runoff water around the project and into down gradient drainages.

We are advising you that any increase in pH, lead, cadmium or cyanide in ground water or surface water above background level due to this project may cause the project to be listed on the national priority list of hazardous substance sites by EPA pursuant to the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).*

All wastes not exempt under the mining exemption will need to be managed in accordance with Utah's Hazardous Waste Management Regulations (i.e. spent solvents, off specification chemicals, undesirable metals in the leach solutions, etc.)

By copy of this letter to the Division of Oil, Gas and Mining, we are requesting that the state mine inspector visit this mine site at least twice per year and inspect all leak detection sumps for these facilities.

Please call Mr. Mack Croft or Mr. Charlie Dietz of our staff if there are any questions.

Sincerely,
Utah Water Pollution Control Committee

Don A. Ostler, P.E.
Executive Secretary

cc: Mr. Brian Buck, JBR Consultants
Mr. Wayne Thomas, Southwest District Health Department
Mr. Bill Dawson, Southwest District Health Department
Mr. Lowell Braxton, Division of Oil, Gas, and Mining

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